

**Ko-ken**

**OFFSET WRENCHES**

**YAMASHITA ENGINEERING RESEARCH COMPANY**





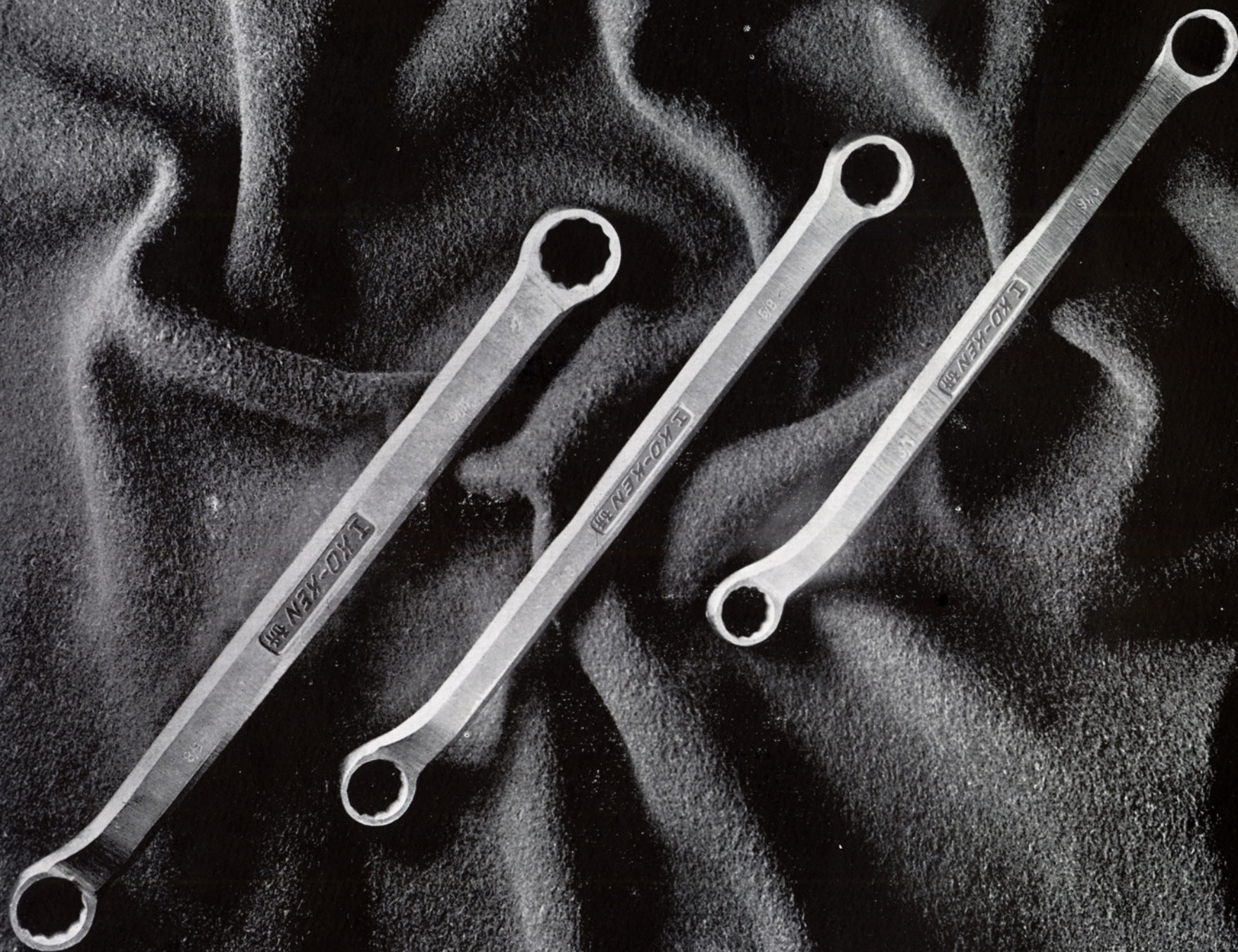
# Koken

## OFFSET WRENCHES

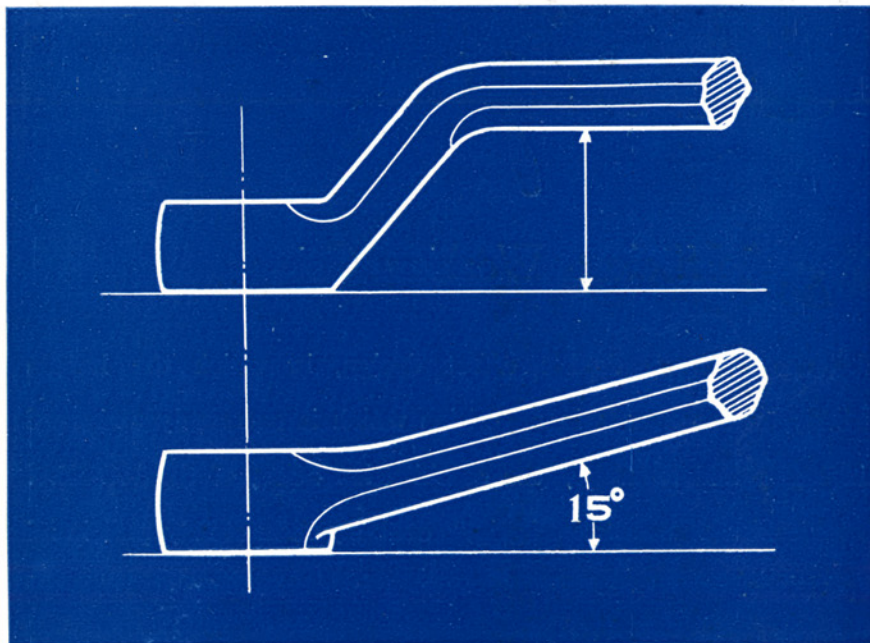
*“Designed for Master Mechanics”*

KO-KEN series of Super Wrenches are designed by veteran mechanics from years of actual experience in automotive and airplane repair work. Hence, characteristic features are found to be engineered in every working detail of these wrenches making them the outstanding choice of all Master Mechanics the world over who value Accurate Design and Rugged Dependability in their day-to-day working tools.







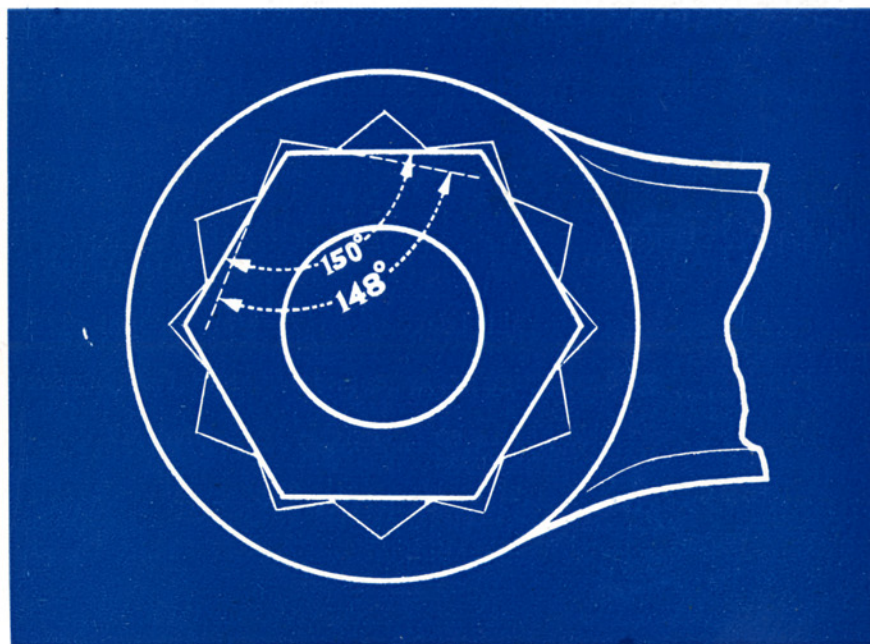


# Design



## Combination Offset Head

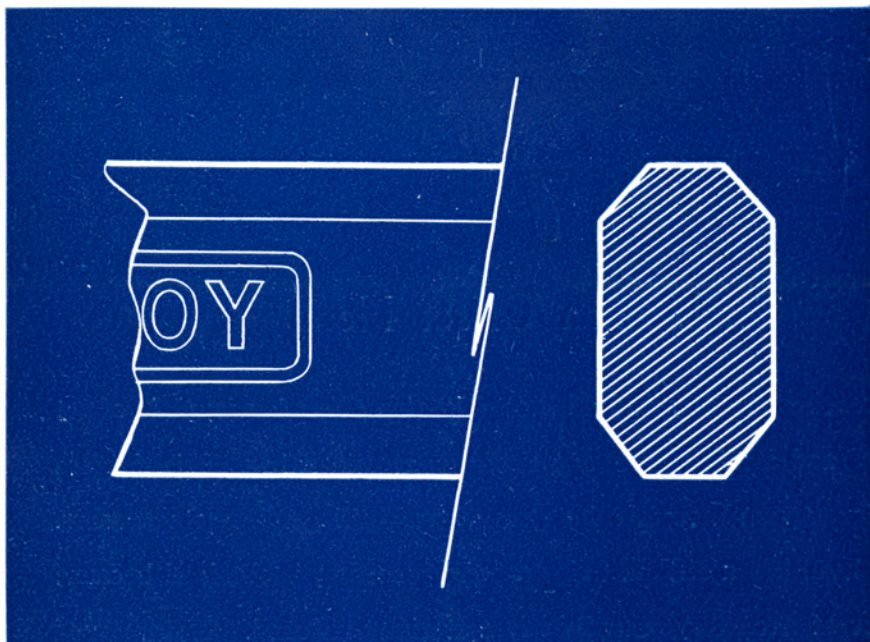
All wrenches are designed with combination offset heads; plain offset at one end and a 15-degree angle offset at the other. This feature provides for extreme accessibility even when working on remote corners. Since each head has a different size opening, economy is obtained because the number of necessary wrenches is materially reduced.



## Double-Hex Opening

Wrench openings are of special 148-degree 12-point design with thin straight walls. This feature enables firm sure grip on all six sides of hexagon nuts, preventing slipping off or rounding of nut corners. Thin head walls provide for ready accessibility even when the nut clearance is extremely limited such as is commonly found when working on modern high speed engines.



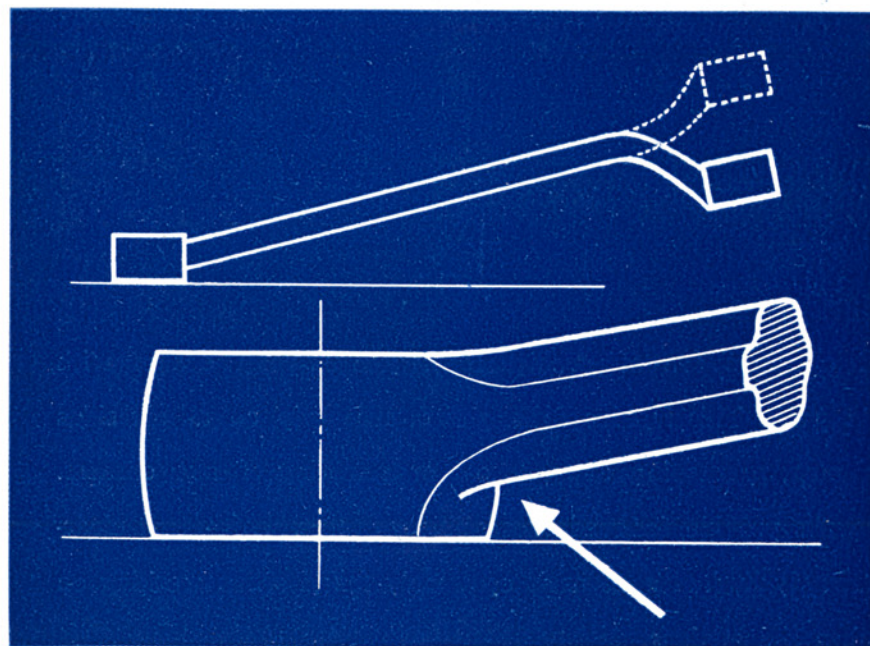


# Design

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## Efficient Working Grip

Unlike the ordinary double offset design, in which the handle end invariably turns upwards in a position which is extremely awkward for efficient grip and leverage, the combination offset of the KO-KEN design provides for a sure "pistol-grip," enabling firm steady pull in all working positions.



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## Octagon Anti-Slip Handle

Special care has been taken in the development of the patented octagon anti-slip handle. The particular form and shape of this handle prevent slippage and bruised knuckles so commonly associated with mechanical repair work. The length of the handle is scientifically correct, providing for proper leverage thus resulting in sufficient torque without damage to the thread.

# Material

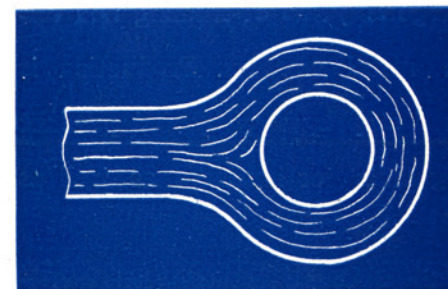
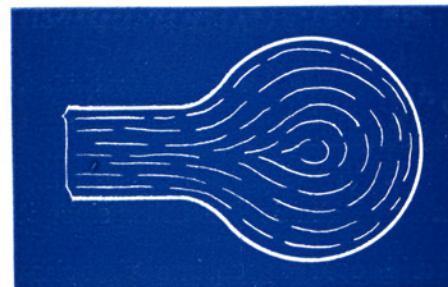
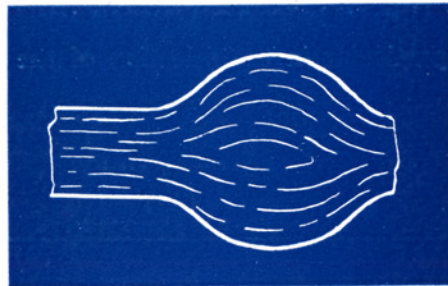
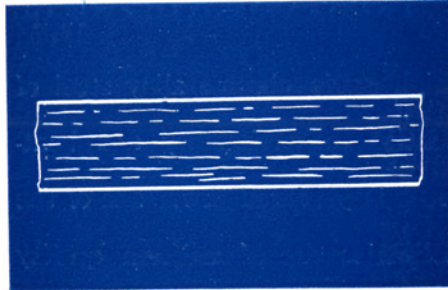
All KO-KEN series Master Mechanic Wrenches are hand forged from high grade chrome alloy steel of special composition. The steel for these tools is selected with special attention to workability and heat-treatment, two important qualifications for this type of work. Quantity shipment is procured from one of the leading steel mills of Japan and constant check is made to assure that all deliveries are of uniform quality. Since the quality of the original steel is one of the basic factors in the production of high grade tools, the manufacturer of KO-KEN series Master Mechanic Wrenches is especially particular in the selection of the source of supply of his raw stock.

# Workmanship

Conscientious care is exercised in the manufacture of KO-KEN series Master Mechanic Wrenches since it is the established creed of the manufacturer that skilled mechanics the world over appreciate first-class workmanship in their every day tools. Every operator at the factory has undergone years of training and discipline under the strict apprenticeship system prevailing among Japanese metal workers. Production is carried on under the most up-to-date condition and the operations are checked step by step by independent inspectors. The finished product must pass several rigid inspections including tests for hardness as well as for dimensions before being accepted for shipment.



Stages in the forming of  
working heads

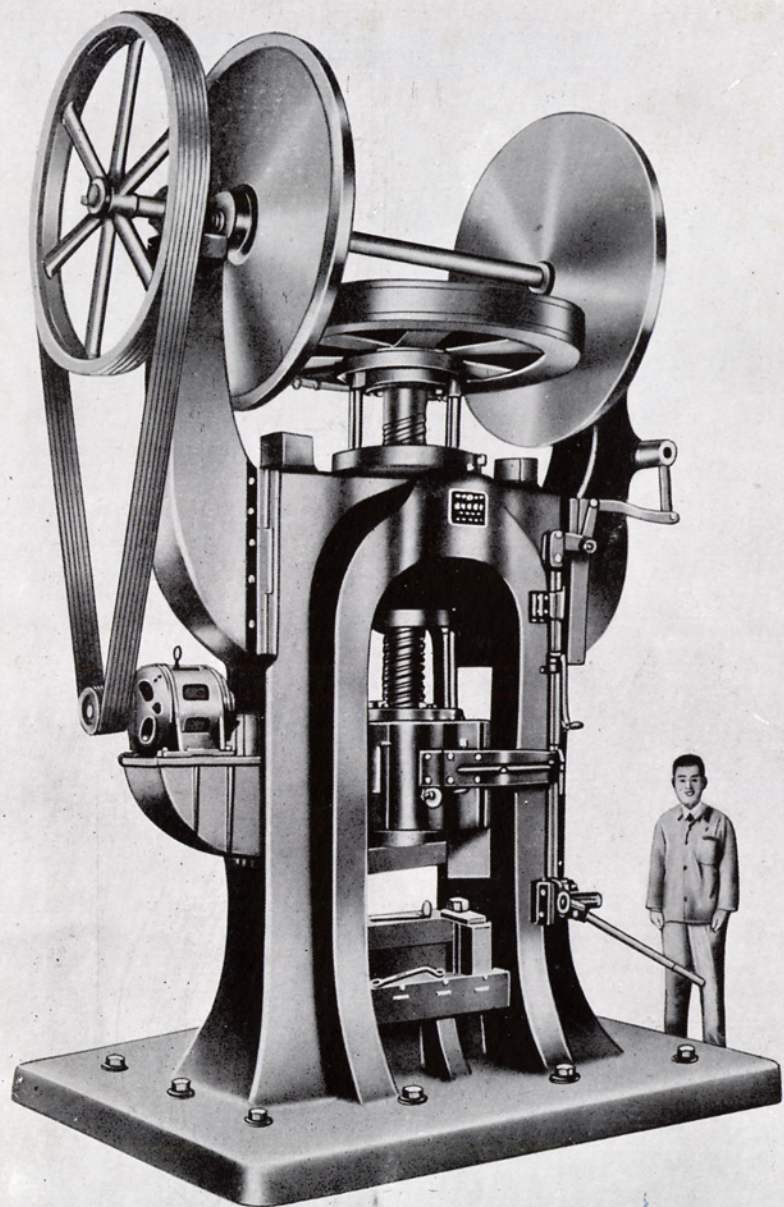


## ***FORGING AND HEAT TREATMENT***

The high points in the manufacture of KO-KEN series Master Mechanic Wrenches are to be found in the forging and the heat treatment processes. Each wrench is individually hand-forged from specially selected chrome alloy steel under a patented process which results in extreme toughness at both heads. Since the forging process gives durability and life to the working ends of the wrench, constant research and development work are being carried on at the factory in connection with this important phase of manufacture.

The heat treating process follows the best practice of modern tool and machinery makers. Up-to-date equipment, especially developed for this class of work is used and two dippings are made for each wrench. The first is in a bath of molten lead which brings the steel uniformly up to the proper temperature. The second dipping, which takes place in a bath of specially prepared chemicals, serves to quench and anneal the steel, bringing out the required combination of toughness and hardness which is so essential for this type of tool. Hardness tests are made at the end of each heat treating process to keep the output within specified limits. Readings are taken at the working heads of all wrenches.





View of huge up-to-date friction type Press  
used in forming the working ends of KO-KEN  
series Master Mechanic Wrenches.

Test Report issued by the Hyogo Prefec-  
ture Miki Metal Testing Laboratory.



試験成績報告書

出願人 西宮市大寺町五丁目  
山 下 京 都

一、依頼品目 オフセットレンチ

二、試験事項 硬度検査

三、出願月日 昭和十七年一月十日

右試験ノ結果左記ノ成績ヲ得タリ依而報告ス

昭和十七年 一月 十日

兵庫縣三木金物試験場

場長 地方商工技師 上 田 治

擔任者 商工技師 小 林 重 夫

左 記

ロツクメル硬度（平均）  
四九乃至五〇



Wrench Number                      Opening Size

Set No. A (3-Piece Inch size opening)

1116..... 1/2 in. & 9/16 in.  
1118..... 9/16 in. & 5/8 in.  
1120..... 5/8 in. & 11/16 in.

Set No. B (5-Piece Inch size opening)

1114..... 7/16 in. & 1/2 in.  
1116..... 1/2 in. & 9/16 in.  
1118..... 9/16 in. & 5/8 in.  
1120..... 5/8 in. & 11/16 in.  
1122..... 11/16 in. & 3/4 in.

Set No. A M (3-Piece Metric size opening)

1212.....12mm & 14mm  
1214.....14mm & 17mm  
1217.....17mm & 19mm

Set No. B M (5-Piece Metric size opening)

1210.....10mm & 12mm  
1212.....12mm & 14mm  
1214.....14mm & 17mm  
1217.....17mm & 19mm  
1219.....19mm & 21mm

